Radiosonde Replacement System (RRS) System Test (ST) Phase 0.2 Report

The latest phase of developmental testing (ST Phase 0.2) was conducted at both the National Weather Service Headquarters (NWSH) and the Sterling Research and Development Center (SR&DC) between April 5 and April 30, 2004.

Between April 5 and April 8, 2004, personnel from OPS24 and the NWS Training Center (NWSTC) conducted a review of the RRS documentation.

At the NWSH, testing was conducted using the RRS external data pump (XDP) simulator using pre-recorded upper air soundings, while the SR&DC was used to conduct hardware related tests as well as live upper air soundings. Products were sent from the SR&DC RRS System 7 to the National Centers for Environmental Prediction (NCEP) and to the National Climatic Data Center (NCDC) for analysis. NCEP observed duplicate levels, which their models successfully rejected. NCEP further reported they were seeing more stable lapse rates than before; but they also saw some sizable height differences (which may have been due to an approaching front). NCDC will provide their report on the archived RRS data on May 10, 2004; however, an initial e-mail indicated NCDC is questioning some unspecified items.

A total of 97 System Issue Reports (SIRs) were written; 49 of those (50.1%) were Impact 1 and 2 SIRs. There were 10 hardware SIRs written–one of those (10%) was an Impact 1 SIR; five (50%) were Impact 2.

A total of 19 valid (i.e., non-observer terminated) upper air soundings were flown using the SR&DC RRS Systems 6 and 7 (7 using System 6 and 12 using System 7). Seventeen of the 19 flights terminated above 10 hPa. The average termination pressure for System 6 was 8.639 hPa; the average for System 7 was 8.658 hPa.

Some of OPS24's major concerns include:

a. The inability of the RRS Workstation Subsystem (RWS) to transmit products by phone lines.
b. Twice during the ST Phase 0.2, the RWS terminated operations due to exception errors (i.e., the RWS crashed - once because of a corrupted database; once when the observer inadvertently clicked behind the horizontal scroll bar and on the last row of processed data.)
c. While not as frequent as in earlier testing, there is still an occasional loss of GPS data from the Signal Processing Subsystem (SPS).
d. Winds being displayed when there was no GPS data.
e. The Wind Direction check message displaying wrong change values - in one case the error was in excess of 25 degrees.
f. The appearance of improperly working algorithms as the wrong temperature data was being rejected.
g. Marking and un-marking data is unreliable in regards to correcting anomalous upper air conditions identified by check messages.